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CLENSEUR, JANE MACLEOD. A Phonetic Analysis of Glossolalia. (1972) Directed by: Dr. Mariana Newton. Pp. 77.

Glossolalia, or speaking in tongues, has been evidenced since Biblical times. Some writers have interpreted glossolalic speech as known foreign languages; other writers have suggested that glossolalic speech utilized the speaker's native language. In the literature, more emphasis is placed on the religious aspects of glossolalia than on the linguistic or phonetic aspects. In recent years, a few linguistic studies have been conducted; however the results of these studies are meager and generally inconclusive. The purpose of this study was to analyze glossolalia phonetically, which would provide information regarding the nature of glossolalia.

Sixteen tape recorded samples of glossolalic speech from 16 speakers, 13 to 63 years of age, were phonetically transcribed independently and reliably by two listeners. The investigator's transcription was found to be reliable and was the one used for further analysis. In order to analyze glossolalic speech, consonant data was grouped into general production features: manner of articulation, place of articulation, and voicing. Vowel data was grouped according to place of articulation and diphthongs. The frequency of phonemes in these categories were compared to the relative frequency of these phonemes in general English.

Analysis of the data revealed that glossolalic speakers used primarily English phonemes. Vowels occurred more frequently than

consonants in glossolalic speech in contrast to English. The patterns of consonant usage in glossolalic speech were essentially the same as patterns in general English with exceptions in each categorization which indicated that certain features were found to be responsible for the general consonant reduction in glossolalia. The fricative manner and alveolar position were used less frequently in glossolalic speech. The increased frequency of back vowels in glossolalic speech distinguished the vowel pattern in glossolalic speech.

Possible reasons for the phonetic differences found between glossolalic speech and English were discussed and suggestions for further research were made.

A PHONETIC ANALYSIS OF GLOSSOLALIA

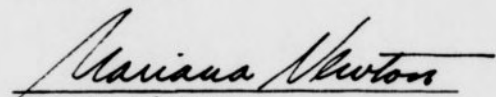
by

Jane MacLeod Clenseur

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Approved by


Thesis Adviser

APPROVAL PAGE

This thesis has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

Thesis
Adviser

Mariana Skorton

Oral Examination
Committee Members

Joseph R. Smith
Murray Crut

December 17, 1971
Date of Examination

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CHAPTER I

INTRODUCTION

Language is universal to all human cultures. Though cultures differ in varying degrees, languages have universality in structure and function. All languages are characterized by phonemes arranged according to syntactic rules. All languages usually have both spoken and written forms. All languages are systems of verbal or visual symbols used as a means of coding man's thoughts, ideas and feelings.

In spite of the universal features, languages vary widely. Some languages have different phonemes from other languages. For example, the German ö does not occur in either French or English. Moreover, variances in syntactical rules occur between languages. Some languages, such as English, employ the verb near the subject of the verb, while others such as German place the verb at the end of a sentence, regardless of the placement of the subject. Variations in word meaning are among the most interesting differences in language, probably greatly influenced by variations in experience. For example, in English there is only one word for snow. But in Eskimo, there are many words distinguishing various qualities and kinds of snow.

Not only do variations occur between languages, but also within languages. Such variations are particularly noticeable in the spoken

forms of a language. Variations occur as a result of the purpose of speech. The language of feelings e.g., love, is quite different from the language of fact e.g., chemistry. In addition, speech (spoken language) varies from speaker to speaker. Some variations may occur as a function of education. Others are a function of geographical region or location, as in Southern dialect, or of race, as in Negro dialects. Still other variations are considered to be defective, resulting from a structural deviation in the speech mechanism, improper learning, or other disorders of the bases of speech.

The speech pathologist is particularly interested in both dialectical and defective differences in speech, though his role is not as well defined with regard to dialects as it is to defects. Classification of a speech difference as dialectical as opposed to defective is not always clear, as in the case of Negro dialects. Baratz (1969) cited views of three professions concerned with describing language and cognitive abilities of black children. Educators viewed the speech of black children as deviant. Psychologists viewed the speech of the black child as being a deterrent to cognitive growth. The linguists indicated that black children "speak a well-ordered, highly structured, highly developed language system which in many aspects is different from standard English." Baratz (1969, p. 91) summarizes a solution to this problem by stating:

Clearly what the psychologist and speech pathologist need is some sense of the ghetto child's culture: how he organizes his world, what his language system is, what his learning patterns are, how they are similar to those of children in middle class white cultures, how they are different, and how these differences interfere with the child's learning in a society that uses white cognitive styles and linguistic patterns as a basis for instruction and assessment of ability.

Taylor (1971) implies that black linguistic performance is typically evaluated according to white norms, therefore, there is uncertainty as to whether black adults or children are demonstrating differences or pathologies.

The criteria for defective speech have been better delineated. Variations in a person's speech may be regarded as defective under the following conditions:

. . . (1) When his voice is not loud enough to be easily heard in the practical situations of his vocational and social life; (2) when his speech is partially or wholly unintelligible because of inaccurate articulation; (3) when his speech is partially or wholly unintelligible by reason of serious lapses of grammar, syntax, or word use; (4) when, for any reason, his speech is intrinsically unpleasant to listen to; (5) when his utterance is so different in rate, rhythm, pitch, loudness, timbre, or individual sounds of speech from that of the average speaker of his age and sex that the differences serve to distract the hearer's attention from what is being said to how it is said; (6) when his speech is accompanied by extraneous mechanical or vocal sounds or by distracting grimaces, gestures, or postures (West, Ansberry, and Carr, 1957, p.8).

A particular variation of speech, glossolalia,¹ has characteristics of both dialect and defect. Speaking in tongues, the more familiar term for glossolalia, is a verbal expression of religious ideas, thoughts and emotion. It is dialectical, not in the regional sense, but in the sense that those persons who speak in tongues have religious beliefs and feelings in common. It is defective in the sense that it meets the criteria:

. . . his utterance is so different in rate, rhythm, pitch, loudness, timbre, or individual sounds of speech from that of the average speaker of his age and sex that the differences serve to distract the hearer's attention from what is being said to how it is said (West, Ansberry, and Carr, 1957, p. 8).

The purpose of this study was to investigate some aspects of the phonetic nature of glossolalic speech. It was hoped that such a study might provide some information about the nature of this behavior.

¹The term glossolalia is derived from the Greek noun, γλῶσσα (tongue) and the Greek verb, λαλέω (I speak). The words combined γλῶσσα and λαλέω mean "to speak or talk in tongues or dialects." The word γλῶσσα is used in three senses; first, the physical organ, second, in the sense of a language, third, referring to a previous or obsolete expression. The second meaning, that of a language, is the interpretation most commonly used by writers on the subject.

CHAPTER II

REVIEW OF THE LITERATURE

Many books, articles, and pamphlets have been written about the charismatic¹ movement, of which glossolalia is a part. Writers have placed considerable emphasis on the religious aspects of this movement and of glossolalia. Relatively little of the literature deals with the linguistic or phonetic aspects of glossolalia.

Four areas of importance regarding glossolalia will be reviewed in this study. The historical and Biblical background of glossolalia will be considered first, followed by a discussion of psychological considerations and linguistic aspects of glossolalia.

Historical Background

The early church leaders referred infrequently to speaking in tongues, although the phenomenon is mentioned in some early writings. After the New Testament era, the earliest clear evidence of glossolalia concerned Montanus, a converted priest who became a prophet and reformer of Christianity. Montanism, which emphasized prophecy as well as glossolalia, originated in Phrygia in Asia Minor during the

¹The word "charisma" means "a spiritual gift from God, a spark of divine energy and inspiration flowing through individuals" (Cornell, 1970, p. 3).

middle of the second century. The gifted theologian, Tertullian (160-220 A.D.), who identified himself with Montanism, referred to glossolalia in his writings. Irenaeus (130-202 A.D.), Bishop of Lyons in Gaul, reportedly mentioned speaking in tongues in his time. Origen (185-254 A.D.), brilliant philosopher who wrote in Alexandria, had some acquaintance with glossolalia in his era. Evidence of Chrysostom (347-407 A.D.), a presbyter at Antioch, and later a patriarch at Constantinople, and that of Augustine (345-430 A.D.), indicated that speaking in tongues had ceased by the late fourth century in both East and West (Hinson, 1967).

The next years showed little evidence of speaking in tongues, suggesting that the phenomenon had essentially ceased from the fourth through the sixteenth centuries. At the end of this period, reports of revivals implied an increased interest in glossolalia.

Hinson (1967) reported two noteworthy revivals of glossolalia, one in France and the other in England, during the seventeenth to nineteenth centuries. He explained that the first widespread evidence of glossolalia occurred in southern France, which followed in the wake of the revocation of the Edict of Nantes by Louis XIV in 1685 and as an outburst of persecution of the French Huguenots. Many of the French Protestants fled to the new world; however, a few remained in the Cevennes mountains of Southern France. They turned to studying the New Testament and came to believe that they were called of God and were filled with the

Holy Spirit. All the manifestations of great religious excitement were present. Hinson added that glossolalia was also evidenced among Jansenists in France in 1731. The second major revival occurred in England during the nineteenth century. This movement centered around a pastor in London, Edward Irving (1792-1834). Irving, who was excommunicated from the Church of Scotland, never spoke in tongues himself; however, his interest and encouragement of the phenomenon resulted in a new sect, the Catholic Apostolic Church. After his death, speaking in tongues continued in a small group of his followers until 1879.

Hinson (1967) related that during this same time, glossolalia was practiced in other revival movements in England and colonial America. The Ranters were glossolalic speakers and used other types of extravagant speech. Speaking in tongues was reported among the Quakers. The Shakers and Mormons were influenced by the movements. Early Methodism did not show evidence of glossolalia, though there did seem to be some cases of repeating the same word over and over among Primitive Methodists in Northern England and Wales. Hinson suggested that John Wesley's positive attitude toward spiritual gifts helped pave the way for modern Pentecostalism, and that the modern day movement had its roots in the revivals of the eighteenth and nineteenth centuries in America.

Many authors verify Hinson's (1967) report of the founding of the Pentecostal churches in the United States in the twentieth century. The fundamentals of the Pentecostal churches, called the "Foursquare Gospel," were "entire sanctification, baptism of the Holy Ghost as evidenced in tongue speaking, faith healing and the premillennial coming of Christ." (Hinson, 1967, p. 68) A movement in Topeka, Kansas, in 1901 centered around Charles F. Parham, founder and leader of the Bethel Bible College. Parham and students of the college claimed to have spoken several languages. Through their efforts, the movement spread through Kansas, Missouri and Texas by 1903. In 1905, Parham opened a Bible college in Houston, Texas. The Pentecostal movement spread to Los Angeles, with the aid of W. J. Seymour, a Negro holiness preacher, who took over the reins of the movement, following his attendance at the Bible college in Houston. The Pentecostal movement spread from Los Angeles to Chicago, New York, and other cities in the United States and Canada (Gaustad, 1962).

Pentecostalism, and glossolalia as a part of its religious practice, continues to grow around the world. Glossolalia, considered an evidence of individuals having received a "baptism in the Holy Spirit," is part of the present-day charismatic renewal movement, or the "Spirit" movement which has penetrated the large historic Protestant churches and also spread to Roman Catholic churches. The New York Times (Fiske, 1970) indicated that 15,000 to 50,000 Catholics are involved in

this movement even though it is only a few years old among Catholics.

Mills (1970, p. 1218) suggested that " . . . the tremendous rise in glossolalia is one of the most significant developments in Christendom during the 60's." Many writers including Hinson (1967) referred to the first public notice of glossolalia among neo-Pentecostals (those participating in the Pentecostal movement but who identify themselves with non-Pentecostal churches) in 1960. At this time, Reverend Dennis Bennett, Rector of an Episcopal Church in Van Nuys, California, resigned rather than fracture his church by his practice of speaking in tongues, and by practice of this phenomenon by members of his congregation. The movement had been going on for some time; however this was the public debut. Reports of the practice of glossolalia in the 1950's had previously been suppressed, perhaps for fear of denominational censure and uncertainty about the experience. According to the Greensboro Record (Harris, 1971), though many churches make no mention of glossolalia or even teach against it, many members are meeting in private homes to seek information about the phenomenon as well as for the purposes of prayer and Bible study.

The Full Gospel Business Men's Fellowship International founded by Pentecostals and now comprised of men of many denominations, has aided in influencing many among Protestant as well as Roman Catholic churches. Voice is a widely circulated periodical published by this group which addresses itself directly to the issue.

Today, many persons are willing to testify that they have heard or experienced glossolalia. John Sherrill (1964, p. 123) described his experience:

It was the floodgate opened. From deep inside me, deeper than I knew a voice could go, came a torrent of joyful sound. It was not beautiful, like the tongues around me. I had the impression it was ugly: explosive and grunting. I didn't care. It was healing and forgiveness, it was love too deep for words and it burst from me in wordless sound. After that one shattering effort of will, my will was released, freed to soar into union with Him. No further conscious effort was required of me at all, not even choosing the syllables with which to express my joy. The syllables were all there, ready-formed for my use, more abundant than my earth-bound lips and tongue could give shape to.

It was not that I felt out of control of the situation. I had never felt more truly master of myself, more integrated and at peace with warring factions inside myself. I could stop the tongues at any instant, but who would? I wanted them never to stop. And so I prayed on, laughing and free, while the setting sun shone through the window and the stars came out.

This religious movement is popular among youth. Look (Vachon, 1971) described the "Jesus movement," involving young people primarily, which has been springing up mainly in California though the movement is spreading to other areas. This nondenominational movement involves hundreds of youth and ministers "dedicated to Jesus," some of whom practice speaking in tongues. Go-go clubs in California have been turned into religious coffee houses where youth go to sing and pray. Melodyland, a large entertainment complex in Anaheim, is now being used by a nondenominational middle-class religious group. Religious groups are forming on various campuses of California e.g., Stanford, Berkeley, and the University of California at Los Angeles. Life (Howard, 1971) referred to the "Jesus movement" in Rye, New York and the

tremendous impact of the movement on the youth. The "message of Jesus" is not being communicated from the pulpit alone, but between the young people, by word of mouth, from phonograph headsets or from radio stations. The success of the rock hit album Jesus Christ Superstar is a measure of the growth of the "Jesus movement" of which glossolalia is a part.

To summarize aspects of the present-day charismatic movement, a current news article (Cornell, 1971) stated that:

. . . its participants report an infusion of the Holy Spirit that empowers their faith with confidence, assurance of God's presence, more vital prayer, frequent healings, greater concern for others and which ordinarily manifests itself through glossolalia, speech in unknown tongues.

Biblical Background

The Holy Bible is the best known and earliest form of literature on the subject of glossolalia. In the Old Testament, there is no reference to glossolalia in the same sense that glossolalia is known in the New Testament or in modern times. The event in the New Testament which placed the greatest importance on speaking in tongues is found in Acts 2:1-4 (R.S.V.). The gift of speaking in tongues was given at the time the Holy Spirit was first poured out upon the new church:

When the day of Pentecost had come, they were altogether in one place. And suddenly a sound came from heaven like the rush of a mighty wind, and it filled all the house where they were sitting. And there appeared to them tongues as of fire, distributed and resting on each one of them. And they were filled with the Holy Spirit and began to speak in other tongues, as the Spirit gave them utterance.

Other explicit references to glossolalia in the New Testament are found in Acts 10:44-46, Acts 19:6, I Corinthians 12-14, and Mark 16:17.

Many biblical interpreters have recognized a difference between Luke's Pentecostal description in Acts of speaking in tongues, and that of Paul in his first letter to the Corinthians. According to Basham (1969), Luke gave an account of how the baptism in the Holy Spirit with speaking in tongues was received, and Paul showed how speaking in tongues was to be used and controlled in the church. The author referred to speaking in tongues as a form of prayer in which a person yields to the Spirit, and receives from the Spirit a supernatural language with which to praise God. He expressed the view that speaking in tongues can be a known language; however, this view does not verify the authenticity of speaking in tongues. He viewed glossolalia as a miraculous gift of the Spirit even when no one present can identify the language.

Hoekema (1966) referred to other differences between glossolalia at the time of Pentecost and at Corinth. Glossolalia at Corinth had to be interpreted, which was not the case at Pentecost. Speaking in tongues, as recorded in Acts, was for the purpose of the validation and confirmation of the outpouring of the Holy Spirit. At Corinth, the purpose was for self edification or edification of the congregation. At Pentecost, glossolalia was a temporary initial experience while at Corinth it was a continuing gift.

The two primary Biblical references to glossolalia imply two main views of the language of glossolalia. Some interpreters explain that speaking in tongues is characterized by the speaking of sounds without any linguistic structure or form. Glossolalia was described by Miller and Miller (1952, p. 14) as follows:

Inarticulate and unintelligible speech, meaningless sounds, jargon, uttered in times of extreme emotional excitement or religious frenzy, apparently in consequence of the belief that the speaker is literally possessed by a spirit not his own, as the Spirit of God.

Another point of view was expressed by a glossolalic speaker, Reverend Harold Bredesen, in an interview with Ormand Drake on a Columbia Broadcasting System television network program ("The Way to Go," 1964). Bredesen indicated that glossolalic utterances at the time of Pentecost and in modern times are recognizable languages. He defined glossolalia as "uttering the unutterable as the spirit gives utterance." Further study reveals differing views of Pentecostal glossolalia described in Acts and Corinthian glossolalia.

Pentecostal Glossolalia

Stagg (1967), as well as other interpreters, understand that Luke represented the speaking in tongues on the day of Pentecost to have been understandable languages of some kind, i.e., intelligible speech. He suggested that Luke's intent was to represent a unique, miraculous occurrence of communication at Pentecost, at which time Jewish pilgrims

of various linguistic backgrounds understood, each in his native language, what was said by those upon whom the Holy Spirit came. The language used implied a phenomenon not understandable on natural grounds.

The Interpreter's Bible (Buttrick, ed., 1954) presented the problem of modern interpretation of glossolalia at the time of Pentecost. This interpretation suggested that the record, as we have it, may not be an accurate description of what actually happened, but rather a compilation of what happened plus reflection, presumptions and judgment of the next generation. The writers (Buttrick, ed. 1954, pp. 37-38) indicated that many scholars agree that speaking in tongues at Pentecost did not refer to speaking foreign languages. The interpretation explained:

It had to do with a kind of religious ecstasy which exceeded the bounds of rationality and was described and deplored by Paul. In other words, in the original experience which the writer of Acts is describing, "speaking in tongues" refers to the tremendous excitement and fervor of the occasion, and a later generation which was impressed by the spontaneous expansion and translatability of Christianity used it as a prophetic taste of that event.

Schaff (1920) stated that either the spectators at Pentecost were endowed with the gift of foreign languages or that the Holy Spirit acted as interpreter among the hearers. Regardless of the view held, he implied that this phenomenon emphasized the universality of Christianity. Pentecostal glossolalia, according to this author, was essentially thanksgiving, praise, and an ecstatic act of worship. It did not need interpretation, as each heard in his own language, or dialect. The

writer gave various views for explaining the foreign language element. The rationalistic point of view denied the miracle, claiming it as a mistake of the early Christian tradition or of the narrator. Many think that speaking in unknown language is logically and psychologically impossible. A second view purported that the hearers imagined they heard their own language. The mystical interpretation regarded speaking in tongues as the restoration of the original language of Paradise or of anticipation of the language of heaven whereby all languages are united. Another view stated that Pentecostal glossolalia endowed the disciples permanently with knowledge of languages in which they were to preach and thus spread the Gospel. Some hold that glossolalia was a temporary speaking in tongues, lasting only during the day of Pentecost, to emphasize the universality of the Gospel. The gift of tongues was seen by others as an act of worship, which did not have to do with spreading the Gospel, but was primarily for the edification of self, and through interpretation, for the hearer's edification.

Corinthian Glossolalia

The account of glossolalia in I Corinthians 12-14 also fosters different interpretations. Some interpreters have indicated that speaking in tongues at Corinth was not the use of foreign tongues or languages, but was the utterance of sounds not understood by anyone. Stagg (1967) expressed the view that tongues at Corinth were not languages like

Latin, Greek, or Aramic, but rather unintelligible utterances. Stagg (1967, p. 38) elaborated further by saying:

They were motor phenomena brought on under the excitement of religious experience. They could result from a genuine encounter with God. On the other hand, "tongues" could be highly desired, expectant, sought and displayed for one's own enhancement.

Schaff (1920, p. 235) agreed that speaking in tongues at Corinth did not involve foreign languages, but a language differing from all known languages, requiring interpretation. He wrote:

It was an act of self-devotion, an act of thanksgiving, praying and singing, within the Christian congregation, by individuals who were wholly absorbed in communion with God, and gave utterance to their rapturous feelings in broken, abrupt, rhapsodic, unintelligible words. It was emotional rather than intellectual, the language of excited imagination, not of cool reflection. It was the language of the spirit, or of ecstasy, as distinct from the language of understanding.

Regarding glossolalia in I Corinthians, the writers of the Interpreter's Bible (Buttrick, ed., 1953, p. 155) related that kinds of glossolalia may be interpreted as "ecstatic utterances." The authors explained:

Under the stress of religious emotion and excitement, the mind, particularly in its subconscious reaches, becomes supercharged, and emotional release is found in these particular ecstatic experiences.

Moffat (1938, p. 210) provided another description of glossolalia. He related:

Here we meet nervous energy discharging itself in a rapid torrent of gasping, incoherent cries from the subliminal consciousness under the powerful religious tension of some revivalist ecstasy.

Another view was presented in Steps to the Upper Room (n. d., p. 20) published by the Full Gospel Business Men's Fellowship International. The book posed the question, "are not 'tongues' ecstatic utterance, a gibberish resulting from emotional exaltation?" The answer stated that scripture indicates that speaking in tongues refers to identifiable language. The answer continued:

The adjective "ecstatic" has no grammatical justification. It is a consequence of scholars' attempts to identify "tongues" in I Corinthians 12-14 with the trancelike and unintelligible mutterings found in some Hellenistic religions.

Psychological Considerations

Psychologists have expressed interest in the background and behavior of glossolalia. Cutten (1927, p. 181) quoted from Mosiman's book, Das Zungenreden und Psychologisch Utersucht, as follows:

As far as I know there is no case of speaking in strange tongues which has been strictly and scientifically investigated that cannot be explained by recognized psychological laws.

Regarding glossolalia in the Apostolic Church, Martin (1960, p. 45) stated it is one of the cathartic expressions which accompanied spiritual redemption. He indicated that glossolalia manifested itself primarily in those individuals who were of such temperament as to make the phenomenon possible. He elaborated:

The individuals were of preconceptual intelligence, unable to control their own "feelings" and incapable of expressing in coherent and intelligible speech their inner experience. These people gave vent to their feelings in tongue-speaking.

Cutten (1927) indicated that speaking in tongues is associated with a disintegration of personality or dissociation of consciousness. When disintegration becomes so severe that the subconscious is in control, the subconscious may concentrate its energy on one motor or sensory function which attracts attention, as in speaking in tongues. Hoekema (1966) continued this point by summarizing a conclusion reached by Mansell Pattison stating that it is possible for glossolalia to occur whenever conscious, willful control of speech is interfered with, and that in modern speaking in tongues, it is usually a psychological accompaniment of intense or ecstatic emotional experiences.

Edson (1962) conducted an investigation of the relationship between glossolalia and personality adjustment to determine if there is a pattern of personality instability among those who speak in tongues. The Minnesota Multiphasic Personality Inventory and the Draw-a-Person Test were administered to 51 people who had spoken in tongues. Edson concluded that there was a slight trend toward emotional instability among the subjects. Test results indicated a lack of honesty in recognizing one's feelings, especially among the women. Findings indicated hostility and aggression among the men, and the presence of feelings of anxiety, fear and guilt among the women.

Regarding glossolalia and mental illness, Oates (1967) discussed those persons who demonstrated both symptoms of mental illness and expressions of speaking in tongues. He cited that a common reaction

of mentally ill persons who speak in tongues is a schizophrenic reaction of a paranoid type. Grandiose and suspicious feelings, perhaps stemming from guilt feelings, may result in exhibitionistic acts which, according to Oates, are present in persons who speak in tongues who are suffering from a psychotic reaction. Oates (1967, p. 97) further described the setting for glossolalia by stating:

The terrible isolation and loneliness of successful people in the middle-class churches has broken out in other forms and manners in this generation. The hyperdependence upon alcohol, the high incidence of psychosomatic disorders, the absence of a clear-cut family structure, and the conventionalization of the church life all provide a fertile soil for the sudden chaotic breakthrough represented in glossolalia.

Oates (1967) presented several other views to be considered regarding the socio-psychological background of glossolalia. He indicated that today, speaking publicly about religion has certain elements of taboo surrounding it. Seen from a psychoanalytic perspective, this "unspeakableness" concerning religion is similar to repression, which may function through other mechanisms of denial, isolation, and reaction. The author suggested that unless these repressed concerns are uncovered these needs may erupt into expressions of pent-up feelings, such as may be found in speaking in tongues. He added that the temper of our times has called forth speaking in tongues. Many persons' feelings burst forth and "they have no language but a cry." However, Oates cited that the cry is a sign of life and has importance as one studies the movement of a child's language from private unintelligibility

to social communicability. Such a study, he indicated, provides clues for studying glossolalic speech. Oates (1967, p. 85) stated:

As speaking in tongues actually expresses itself, however, it is a childlike, unguided, and unpatterned kind of speech. It is untranslatable and is meaningful to the person experiencing it in much the same way that the first utterances of a small child are meaningful to him.

Oates compared speaking in tongues with the development of language in the thought of the child, as studied by Jean Piaget, a Swiss teacher of philosophy, psychology and history of scientific thought. Oates reviewed Piaget's classification of the speech of children into two categories: ego-centric speech and socialized speech. When a child speaks ego-centrally, he speaks for the joy of speaking itself, and is not concerned with the listener. There are three categories of ego-centric speech as classified by Piaget. Repetition, the first one, involves repeating a conglomeration of syllables and words, for the pleasure of talking. Glossolalic speech is comparable to this kind of speech. At this stage, it does not bear a social character. In monologue, the second category, the child thinks aloud, and talks to no one in particular. However, the language of the speaker and the listener are the same. The third category is dual or collective monologue. Another person is involved or present in this stage, though he is not expected to attend to or understand the child. He serves as a stimulus to the speech only. Among glossolalic speakers outsiders are associated with the speaking, but they do not understand or attend.

Oates continued the analogy by relating that the child then moves toward socialized speech whereby he exchanges thought with others and tries to influence their actions. He is now concerned with the hearer's point of view. Criticism, meaning argument or copying, is a part of this stage. Speaking in tongues may be characterized as socialized speech as groups participate and exchange ideas about speaking in tongues. They develop common aims, typical of this stage, and criticism is evident as argument and imitation take place. Oates summarized that speaking in tongues is not only ego-centric speech, but is an attempt at socialization.

Linguistic Aspects of Glossolalia

William E. Welmers (1963, pp. 19-20) professor of African languages at the University of California at Los Angeles, described the language of glossolalia in a letter to the editor of Christianity Today. His description stated:

Now, I have had the opportunity of making a sympathetic study of an alleged instance of speaking in tongues. And I must report without reservation that my sample does not sound like a language structurally. There can be no more than two contrasting vowel sounds, and a most peculiarly restricted set of consonant sounds; these combine into a very few syllable clusters which recur many times in various orders. The consonants and vowels do not all sound like English (the glossolalic's native language), but the intonation patterns are so completely English that the total effect is totally ludicrous.

Samarin (1970a, pp. 2-3) stated that the most typical form of glossolalia is speaking in tongues in the Christian church, which is

believed to be God-inspired speech in known languages. He related that glossolalia is an additional code in the Pentecostal's total repertoire which functions to define and express his religious experience. The writer referred to glossolalia which is almost indistinguishable from this religious form and which is represented by pseudolinguistic speech created by adults and children in other contexts, as in spiritism or as in play. Glossolalia in this form is defined:

Unintelligible extemporaneous post-babbling speech (1) that exhibits superficial phonologic similarity to language without having consistent syntagmatic structure and (2) that is not systematically derived from or related to known languages.

Samarin (1970a, p. 16) summarized his conclusions:

This paper claims that a causative explanation for glossolalia must account for (1) religious behavior that is not demonstrably pathological or dissociative and (2) other spontaneous, ephemeral, and "meaningless" utterances in non-religious contexts. It is suggested that there is a single phenomenon of linguistic "regression" whose basic component is a stream of speech produced unconsciously with early-acquired rules of phonation but more or less consciously modified according to socially meaningful values and attitudes.

Eugene A. Nida (1965), American Bible Society linguist, presented a paper on glossolalia at the Linguistic Society of America. A review of his study is important in considering the language of glossolalia. His analysis of glossolalia is restricted to those forms which actually employ sound.

Regarding intonational patterns, Nida stated that only those patterns characteristic of the speaker's native tongue appear in glossolalic speech. Three patterns were noted: oratorical or preaching,

pleading and praying, and liturgical and incantational.

Nida noted the absence of certain paralinguistic features, such as hesitations, pauses, false starts and repetitions in some glossolalic speech, suggesting that the sequences of consonants and vowels are under non-cortical control, and that there is no conscious encoding of the sequences. Nida considered the presence of some paralinguistic features as indications that speakers may be more or less consciously imitating a language form.

Morphological structure of glossolalic speech was difficult to assess; however, Nida noted that frequently recurring groups of two or three syllables appear, having the characteristics of words. They are short, have similar phonological forms, and are probably psychologically equivalent to words for the speakers. The word "Jesus" in its Greek form, Hebrew words for God, and certain fixed English phrases were noted in glossolalic speech.

Regarding syntactic structure, Nida's analysis indicated a tendency for the speaker to use fixed phrases as repeated elements at the end of breath groups, rather than at the beginning. Semantic structures could not be ascertained. The report indicated the presence of dialects in glossolalic speech as some people imitate the more prestigious glossolalic speakers.

In regard to phonology, Nida reported that a person speaking in tongues may use only a very limited number of consonants, which are

predominantly lingual, followed by bilabial and velar consonants in order of frequency. The number of vowels is also restricted. The most frequently used vowels are /a/, /i/, and /o/, with less frequency of /u/ and /e/. Most of the allophonic characteristics of vowels and consonants are those which appear in the speaker's native language. One or two allophones are selected, and repeated with great frequency. Certain phonological features, or styles of speech, are evident. Speech may be heavily glottalized, or it may include explosive emphatic elements or heavy breathiness and aspiration. As these features affect the consonants and vowels, they are stylistically additive features, and are not parts of the phonological structuring. In addition, Nida noted that all syllables tend to be open, in that they end with a vowel, and some syllables are frequently repeated. Many breath groups end in the same syllable or with the same vowel, especially /a/. Few diphthongs and consonant clusters appear.

Nida summarized his findings suggesting that in considering phonological structure, the inventory of sounds used in glossolalic speech does not indicate the kind of structural relationships found in actual languages. He also indicated that the range of allophones, the frequency of occurrence and the distribution within the breath group do not correspond to what one finds in actual languages. He stated that this phenomenon is a kind of ecstatic speech. It does not have the essential characteristics of languages.

An evaluation of Nida's analysis of the linguistic features of glossolalic speech is difficult because his report does not include any methodological information. The procedure for obtaining samples of glossolalic speech, the number and length of the samples used, and the numerical data on phoneme and allophone frequencies is not included in his report. Therefore, the results of Nida's analysis remain inconclusive and vague.

Wolfram (1966) studied glossolalia from the viewpoint of structured linguistics. Linguistic analysis was based primarily on recorded glossolalic texts obtained from eight speakers. Phonetic transcriptions of a total of 17 texts were divided into breath groups. The length of texts ranged from 18 to 202 breath groups. Results of the analysis were compared with a supplemental corpus of 19 glossolalic speakers and 29 different texts. The texts of the latter group were not transcribed, but were used to test hypotheses suggested on the basis of the primary corpus. Individual sample inventories were presented and discussed and conclusions, based on numerical data, were made regarding the phonemic inventory of glossolalia.

Wolfram's findings indicated that the phonemes used in glossolalia were predominantly identified with phonemes of the speaker's native language, which in these cases was English. All phonemes of the English system were used, based on a composite inventory of all glossolalic samples in the study. A limited number of non-English

phonemes were evident, which the author suggested may be due to the speaker's knowledge of another language or could result from phonetic experimentation with non-English phonemes. A second conclusion stated that glossolalia, in relation to English, showed a selection deficiency in the phonemic inventory. In the glossolalic samples, the mean for the number of consonants was 15, for vowels 8.2 and for diphthongs 1.8, which the writer stated was lower than the total number of phonemes occurring in general American English. All the consonants of English were not found in any sample in the study.

Another conclusion suggested that the speakers showed diversity in the individual phonemes selected, though in all of the samples, consonants occurred in at least four positions: bilabial, alveolar, alveopalatal, and velar. At least stops, sibilants and nasals occurred, regarding manner. High, mid, and low vowels, in regard to tongue height, were evident in the samples. The study also revealed a set of basic phonemes for each speaker which occurred consistently in all texts of the speaker.

The relative frequency of phonemes in glossolalia was based on three sample frequency counts of 3,000 phonemes each. Findings indicated a higher percentage of vowels than is found in general English. Also the frequency of vowels deviated from the frequency of vowels in English. The higher frequency of /a/ and /i/ were the most noticeable deviations from English. The relative frequency of

individual consonants did not deviate greatly from English, although tables indicate deviations. The major deviation regarding positions of articulation was the lower frequency of the labio-interdental position, although there were individual variations. Glossolalic samples showed deviations from English regarding voiceless and voiced phonemes. Two speakers showed a marked increase in the proportion of voiceless phonemes while the third showed an increase in proportion of voiced phonemes.

Description of syllable types was based on samples from each informant. Wolfram found that syllable types are predominantly identified with English syllable types, with some exceptions noted. Restriction of syllable types was noted in some of the samples. Vowel, consonant-vowel, and consonant-vowel-consonant were the only types found in all of the samples. A higher frequency of open syllables in glossolalia as compared to English was evident.

Wolfram indicated that it is improbable that glossolalic speakers are speaking an unlearned non-native language, as the phonetic structure of glossolalia is closely correlated with the language background of the speaker. The similarities between glossolalic speakers, found in this study, would not be expected if different languages were represented. For example, the high frequency of /a/ and open syllables would not be expected if different languages were represented. Also, morphological features found are not typical of natural language system.

Though glossolalia has been examined as a religiously and psychologically based behavior, the studies of this phenomenon as a speech behavior have been few and inconclusive. It was with this consideration in mind that the present study--a phonetic analysis of glossolalia--was designed.

CHAPTER III

PROCEDURES

The practice of speaking in tongues, or glossolalia, has received attention primarily as a prayer activity of the Pentecostal sects. Glossolalic speech is considered by some to be a manifestation of a formal language; others consider this speech to be a prayer language, not related to any other language. In studying glossolalic speech, attention has been given to both the religious aspects of this phenomenon as well as to linguistic features of the speech itself.

The revival of glossolalia as a practice of widespread religious groups, part of the charismatic movement, has made the study of glossolalia a matter of timely interest. Glossolalia could be categorized as either dialectical in that those persons who profess to speak in tongues have religious beliefs in common. Or it could be considered defective in nature in that:

. . . his utterance is so different in rate, rhythm, pitch, loudness, timbre, or individual sounds of speech from that of the average speaker of his age and sex that the differences serve to distract the hearer's attention from what is said to how it is said (West, Ansberry, and Carr, 1957, p. 8).

The possibility that a phonetic analysis of glossolalic speech might yield information which would help to clarify some aspects of

this speaking behavior is proposed. The specific research questions which the study was designed to answer are presented below. Following this, the subjects, sampling procedure, and the procedures used in this investigation will be discussed.

Statement of the Research Questions

This study was designed to answer the following questions:

1. Do glossolalic speakers use English phonemes, and if so, with what frequency?
2. What is the relationship between the frequency of English phonemes in glossolalic speech and in general English?
3. Categorizing phonemes by distinctive features, are there patterns of frequency which distinguish glossolalia from English?

Subjects

Sixteen subjects, 9 males and 7 females were used in this study. The subject's ages, which were not used as criteria for subject selection, ranged from 13 to 63 years. Various vocations were represented in the sample, including students, a minister, a chemical engineer, an insurance executive, a realtor and housewives.

Acquaintance with glossolalic speakers was first made through a local minister who suggested possible subjects. Several prayer groups known to be attended by glossolalic speakers were attended. Acquaintance was made with individual members of each group.

Originally, difficulty was experienced in locating glossolalic speakers. However, a glossolalic speaker who was interested in the study supplied the names of other possible subjects known to her. Also, several of the other glossolalic speakers made available additional names.

Prospective subjects were initially approached by telephone. Persons were informed briefly of the nature of the study. The individual's specific participation in the study was not explained at this time. A personal interview was arranged with each person. Of the 39 persons contacted by telephone, 32 were interviewed. The majority of those visited were eager to discuss their religious views regardless of whether they participated in the study by recording glossolalic speech. Only one individual was openly hostile and resentful toward the study. Each person responded readily either positively or negatively regarding their participation in the study.

Refusal to participate in the study was based on the individual's personal decision. Reasons for refusal to participate in the study varied. Some persons stated they did not "feel led by the Holy Spirit" to record glossolalia; others indicated that religious beliefs, or expressions of religious beliefs, should not be subjected to research. One individual expressed the fear that he would lose the "gift" of speaking in tongues if he participated in the study.

Care was taken to insure the privacy of those contacted. No one was coerced to participate in the study. At the time of the personal interview, each person was informed of the nature of his participation, i. e., to record his glossolalic speech. Final selection of the subjects was based on individual verbal consent.

Nature of the Speech Samples

Tape recordings of 16 glossolalic speakers were made on a Wollensak tape recorder, Model 3500, using a dynamic microphone. Recordings were made at 3 3/4 inches per second on a 1.0 mil splice-free polyester Sony Pr-150 tapes. A pilot case was conducted prior to the study. The glossolalic speech of one speaker was recorded in order to determine the clarity of the recordings. This case indicated that the signal to machine noise ratio was too high. Therefore, a 6 foot extension cord was attached to the 4 1/2 foot microphone cord. Recordings were taped 10 1/2 feet from the recorder, thus eliminating machine noise and insuring clear recordings. This procedure was verified prior to the sampling procedures.

At the time of the prearranged interview, each person was informed of the nature of his participation in the study, i. e., to record glossolalia. After verbally consenting to participate, arrangements were made for the taping sessions. Some subjects chose to record glossolalia at the time of the interview; others preferred to keep the

recorder and record at their convenience. In the latter cases, instructions for operating the recorder were given to the subjects and the recorder was made available to the subject for several days. During recordings made at the time of the interview, the investigator acted as observer only and remained silent.

Regarding instructions, subjects were asked to make a recording of glossolalia. Specific directions as to what to say or the length of the recordings were not given to the subject.

The recordings varied in length from 12 seconds to 5 minutes 25 seconds. During the recording, the majority of the subjects spoke in English prior to recording glossolalia. Some individuals preached a sermon; others gave interpretations of speaking in tongues in terms of their religious philosophy. Other English samples were repetitive statements of praise and thanksgiving. In most cases glossolalia was recorded as prayer, from the point of view of the subject. English and glossolalia samples indicated that some of the speakers spoke at the rate of their natural speech. Others spoke more rapidly than their normal speech.

Analysis of the Recorded Speech Samples

A phonetic transcription was made of each of the 16 recorded samples of glossolalic speech. The International Phonetic Alphabet was used, with the exception that /a/ was used for the vowels /a/ as in

"father," /p/ as in "not" (Eastern), and /a/ as in "path" (New England), as distinctions between these sounds was impossible. The recordings were listened to on three different occasions in order to transcribe the speech as accurately as possible. Two other speech pathologists, skilled in phonetic transcription, listened to speech samples selected at random. Their transcription was compared to the investigator's transcription and the mean interjudge reliability, computed according to the Pearson Product-Moment Correlation Co-efficient, was found to be .7603. This statistic indicates that the investigator's phonetic transcription was reliable and was the one used for further analysis.

Consonant phonemes were classified according to distinctive features. The chart arrangement of those features by Van Riper and Smith (1962) was used for classification. The chart included the following divisions according to place of articulation:

- bilabial - m, w, p, b
- labio-dental - f, v
- dental - θ, ð
- alveolar - n, l, s, z, r, ʃ, dʒ, t, d
- palatal - j, ʃ, ʒ
- velar - ŋ, k, g
- glottal - h

The following divisions according to manner of formation included:

- nasal - m, n, ŋ
- glide - w, j
- lateral - l
- fricative - f, v, θ, ð, s, z, r, ʃ, ʒ, h
- affricate - tʃ, dʒ
- stop - p, b, t, d, k, g

Vowels were classified as follows (Fisher and Logeman, 1971):

front vowels - i, I, e, ɛ, æ
central vowels - ʌ, ə
back vowels - u, ʊ, o, ɔ, ɒ
diphthongs - ʌɪ, ɔɪ, əʊ

Each phoneme, as determined by the method described above, was classified according to distinctive features. The phonemes were plotted on the chart and a tabulation was made of the frequency of occurrence of each phoneme. Utilizing these procedures, a phonetic transcription of each speaker's sample and a classification by distinctive features of every phoneme within that sample was obtained.

CHAPTER IV

RESULTS OF THE INVESTIGATION

Data on sixteen glossolalic speakers was obtained in order to investigate the phonetic characteristics of glossolalia. Tape recorded samples of each subject's glossolalic speech were obtained as described. The speech samples were analyzed reliably by the investigator who wrote a phonetic transcription of each speech sample. These measures provided the data which is presented in this chapter.

English Sounds in Glossolalia

Because the nature of glossolalia has been a controversial subject, it was a matter of interest to determine to what extent glossolalic speakers used English phonemes. All but one of the speakers used sounds which were transcribed by the listeners as English. One speaker used a sound which was transcribed by one listener as a hypernasal /n/. It should be recognized that such a production might have been considered as a foreign sound e.g., the French nasal, had the listeners been other than English-speaking. Though the listeners have all had some instruction in one or more foreign languages, they do not habitually use any other language than English.

Although the sounds of the glossolalic speech of English speakers appear to be primarily English sounds, not all of the sounds of English were used by every speaker or by the speakers as a group. That is, the speakers were selective. Of the 24 English consonants, glossolalic speakers used 9 to 18 consonant phonemes, with a mean of 11.812. Of the 15 common vowels and diphthongs in English, glossolalic speakers used from 6 to 13 vowels, with a mean of 9.895.

These results are consistent with the findings of Wolfram (1966), who reported that the phonemes used in glossolalia are predominantly the same as those of the speaker's native tongue, which is English. However, he reported a limited number of non-English phonemes, which he suggested may be due to the familiarity of the speaker with another language. For example, he cited the occurrence of the high front rounded vowel / \ddot{u} / which may be attributed to the subject's familiarity with French. He also suggested that non-English phonemes may result from phonetic experimentation with non-English phonemes. For example, regarding one of his subjects, the occurrence of trill / ʀ / may be attributed to the subject's background which included formal training in phonetics. Wolfram also supports selectivity of phonemes, although his group analysis revealed that all the phonemes of the English system were used. His study indicated that the mean number of consonants was 15, and the mean number of vowels and diphthongs was 10.

Consonant and Vowel Frequency

To determine the consonant and vowel characteristics of glossolalic speech, a comparison was made between the frequency of vowel usage and the frequency of consonant usage. The number of vowels used divided by the total number of phonemes in a single sample yielded a percentage of vowels. A similar procedure using the number of consonants yielded a percentage of consonants. A mean percentage for vowels and consonants across subjects was computed.

The group difference between the percentage of vowels in glossolalic speech and the frequency of occurrence of vowels in English (Dewey, 1923)¹ was determined by a t-test. Likewise, the group difference between the percentage of consonants in glossolalic speech and the frequency of occurrence of consonants in English (Dewey, 1923) was tested. Both differences were significant at the .05 level. Consonants accounted for only 47.91 per cent of the phonemes of glossolalia, while in English they account for 61.34 per cent (t = 25.137). By contrast, vowels accounted for 52.09 per cent of glossolalia, whereas in English they account for only 36.66 per cent (t = 28.879). Table 1 presents the percentages of consonant and vowel phonemes in glossolalic speech as compared to the relative frequency of consonants and vowels in English.

¹The frequency of phonemes in English determined by Dewey, considered a classic on this subject, is henceforth used in this study when comparing glossolalic speech to general English.

TABLE 1

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE
PERCENTAGES OF CONSONANT AND VOWEL PHONEMES IN
GLOSSOLALIC SPEECH AND THE RELATIVE FREQUENCY
OF CONSONANTS AND VOWELS IN ENGLISH

	English ¹	Glossolalia	<u>t</u>
Consonants	61.34	47.91	25.137*
Vowels	36.66	52.09	28.879*

$t_{.05} = 2.131$ with df 15.

¹Dewey reported the word the to account for 2 per cent of his sample. In view of the fact that glossolalia has no detectable words, 2 per cent of Dewey's sample was omitted. Thus, the English phonemes sum to 98 per cent.

These findings are consistent with the findings of Wolfram (1966).² His study of phoneme frequency, using three samples of frequency counts, revealed that the frequency of vowels in glossolalia is higher than is expected in standard general English.

In order to further analyze glossolalic speech, consonant data was grouped into general production features: manner of articulation, place of articulation and voicing. Vowel data was grouped according to place of articulation and diphthongs.

Consonants, Manner of Articulation

To investigate the consonantal characteristics of glossolalic speech, a comparison was made between the frequency of occurrence of consonant phonemes grouped by manner of articulation: nasals, glides, laterals, fricatives, affricates, and stops. The total number of consonants within each grouping was divided by the total number of phonemes in a single sample which yielded a percentage of consonants within each grouping by manner of articulation. A mean percentage for each grouping across subjects was computed. A t-test, to determine the group difference between the percentage of consonants by manner of articulation in glossolalic speech and the frequency of occurrence of these consonant groupings in English, is shown in Table 2.

²Wolfram compared glossolalic speech with the relative frequency of English phonemes taken from Hayden (Hayden, Rebecca E., "The Relative Frequency of Phonemes in General American English," Word 6: 217-223, 1950). However, Hayden's data and Dewey's data of 27 years earlier are remarkably similar.

TABLE 2

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE
 FREQUENCY OF OCCURRENCE OF CONSONANT PHONEMES
 GROUPED BY MANNER OF ARTICULATION IN GLOSSOLALIC
 SPEECH AS COMPARED TO THE RELATIVE FREQUENCY
 OF THESE PHONEMES IN ENGLISH

	English	Glossolalia	<u>t</u>
Nasals	11.19	13.15	0.385
Glides	2.73	1.66	3.553*
Laterals	3.82	4.21	0.437
Fricatives	23.51	10.52	12.943*
Affricates	.98	.32	2.819*
Stops	19.11	18.05	0.649

$t_{.05} = 2.131$ with df 15.

The glossolalic speakers used all manners of articulation. Affricates were the least used consonants and stops were the most common consonants used. Of the nasals, /ŋ/ was the only phoneme omitted. Of the fricatives, /θ/ and /ʃ/ were omitted. Analysis demonstrated a significant difference at the .05 level between the frequency of occurrence in glossolalia and in general English of glides ($t = 3.553$), fricatives, ($t = 12.943$), and affricates ($t = 2.819$). There was not a significant difference regarding nasals ($t = 0.385$), laterals ($t = 0.437$), and stops ($t = 0.649$). Other known investigators have not presented data according to manner of articulation.

Consonants, Place of Articulation

To further analyze glossolalic speech a comparison was made between the frequency of occurrence of consonants grouped by place of articulation: bilabial, labiodental, dental, alveolar, palatal, velar, and glottal. The total number of consonants within each grouping divided by the total number of phonemes in a single sample yielded a percentage of consonants within each grouping by place of articulation. A mean percentage for each grouping across subjects was computed.

In order to determine the group difference between the percentage of consonants, grouped by place of articulation, in glossolalic speech and the frequency of occurrence of these groupings in English, a t -test was computed. Analysis demonstrated a significant difference

at the .05 level between the frequency of occurrence in glossolalia and in general English of bilabials ($\underline{t} = 3.145$), labiodentals ($\underline{t} = 93.735$), dentals ($\underline{t} = 7.520$), alveolars ($\underline{t} = 7.044$), palatals ($\underline{t} = 3.754$), and velars ($\underline{t} = 2.640$). There was not a significant difference regarding glottals ($\underline{t} = 1.099$). Regarding labiodentals, 12 subjects did not use this place. Table 3 presents the frequency of occurrence of consonant phonemes grouped by place of articulation in glossolalic speech as compared to the relative frequency in English.

TABLE 3

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE
FREQUENCY OF OCCURRENCE OF CONSONANT PHONEMES
GROUPED BY PLACE OF ARTICULATION IN GLOSSOLALIC
SPEECH AS COMPARED TO THE RELATIVE FREQUENCY
OF THESE PHONEMES IN ENGLISH

	English	Glossolalia	\underline{t}
Bilabial	8.87	6.75	3.145*
Labiodental	4.20	.08	93.735*
Dental	1.88	0.00	7.520*
Alveolar	38.53	27.58	7.044*
Palatal	1.50	4.95	3.754*
Velar	4.51	6.85	2.640*
Glottal	1.85	1.34	1.099

$t_{.05} = 2.131$ with df 15.

The glossolalic speakers used all places of articulation except dental. The dental place is used for the /θ/ and /ð/. The alveolar

position was most frequently used. These findings are consistent with Wolfram (1966) who reported a lower frequency of consonants in the labio-interdental position, and a higher frequency of alveolar consonants. Nida (1955) reported that consonants of glossolalic speakers were predominantly lingual,¹ followed by bilabial and velar in order of frequency.

Consonants, Voicing

The relationship between the frequency of voiced and voiceless consonants used in glossolalic speech was determined. The total number of voiced consonants was divided by the total number of phonemes in a single sample in order to yield a percentage of voiced consonants. A similar procedure yielded a percentage of voiceless consonants. A mean percentage for voiced and voiceless consonants across subjects was computed.

In order to determine the group difference between the percentages of voiced consonants in glossolalic speech and the frequency of voiced consonants in English, a t-test was utilized. The group difference between the percentage of voiceless consonants in glossolalic speech and the frequency of occurrence of voiceless consonants in English was also tested. Both differences were significant at the .05 level. Voiced consonants accounted for 23.66 per cent of the phonemes

¹Nida does not indicate his classification of lingual consonants.

in glossolalia, while in English, they accounted for 39.10 per cent ($t = 13.150$). Voiceless consonants accounted for 24.19 per cent of the phonemes in glossolalia, whereas in English they account for 22.24 per cent ($t = .577$). Table 4 presents the frequency of consonants grouped by voiced and voiceless characteristics in glossolalic speech as compared to the relative frequency in English.

TABLE 4

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN
THE FREQUENCY OF OCCURRENCE OF CONSONANT
PHONEMES GROUPED BY VOICED AND VOICELESS
CHARACTERISTICS IN GLOSSOLALIC SPEECH AS
COMPARED TO THE RELATIVE FREQUENCY
OF THESE PHONEMES IN ENGLISH

	English	Glossolalia	t
Voiced	39.10	23.66	13.150*
Voiceless	22.24	24.19	.577

$t_{.05} = 2.131$ with df 15.

Glossolalic speakers used both voiced and voiceless consonants with about the same frequency. This finding is inconsistent with Wolfram (1966) who reported that of the three glossolalic samples used in his study, two subjects showed a marked increase from general English in the proportion of voiceless consonants. The third subject showed a slightly higher frequency of voiced consonants than voiceless consonants.

Vowels, Place of Articulation

Vowel usage in glossolalic speech was determined by comparing the frequency of occurrence of vowels grouped by place of articulation: front, central, and back vowels. A separate grouping of diphthongs was necessary to distinguish them from single phonemes. The total number of front vowels was divided by the total number of phonemes in a single sample in order to yield a percentage of front vowels. A similar procedure yielded a percentage of central vowels, back vowels, and diphthongs. A mean percentage for front, central, and back vowels and diphthongs across subjects was computed.

To determine the group difference between the percentage of vowels within each group by place of articulation in glossolalic speech and frequency of occurrence of these vowel groupings in English, a t-test was utilized. Analysis revealed a significant difference at the .05 level between the frequency of occurrence in glossolalia and in general English of front vowels (t = 3.032), central vowels (t = 4.471), back vowels (t = 11.324), and diphthongs (t = 3.185). Table 5 presents the frequency of vowel phonemes grouped by place of articulation in glossolalic speech as compared to the relative frequency in English.

The glossolalic speakers used all the vowels. The back vowels were used most frequently, with a higher frequency of /a/ and /o/.

TABLE 5

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE
FREQUENCY OF OCCURRENCE OF VOWEL PHONEMES GROUPED
BY PLACE OF ARTICULATION IN GLOSSOLALIC SPEECH
AS COMPARED TO THE RELATIVE FREQUENCY OF
VOWELS IN ENGLISH

	English	Glossolalia	<u>t</u>
Front vowels	19.50	16.78	3.032*
Central vowels	5.90	10.84	4.471*
Back vowels	8.64	23.35	11.324*
Diphthongs ¹	2.31	1.12	3.185*

$t_{.05} = 2.131$ with df 15.

¹The diphthong \dot{u} or $/\Gamma u/$ was omitted because present practice in phonetic transcription usually considers this as two sounds, $/I/$ and $/u/$. This diphthong accounts for .31 percent of the English vowel phonemes.

The back vowels were followed in order of frequency by front vowels with a high frequency of /i/. These findings are consistent with Nida (1965) who reported that the most frequently used vowels were /a/, /i/, and /o/. Wolfram (1966) also found that /a/ and /i/ occurred with relatively high frequency in glossolalia.

CHAPTER V

DISCUSSION

This study was conducted to investigate some aspects of the phonetic nature of glossolalia. It was hoped that such a study might provide some information about the nature of this behavior.

Of particular significance is the reversal in the consonant and vowel relationship in glossolalic speech as compared to English. The frequency of consonants is greater than the frequency of vowels in English, whereas in glossolalic speech the frequency of vowels exceeds the frequency of consonants.

A possible interpretation for the reversal of the consonant-vowel ratio is related to language learning of the infant. Two factors seem to be related to the learning and use of phonemes in infants: ease of production (Locke, 1971) and informational loading (Menyuk, 1971). Vowels require less effort to produce than consonants and thus are learned earlier and occur more frequently in infants. In terms of ease of production, glossolalic speech may be comparable to infant speech. Ease of production which is reflected in the higher frequency of vowels may be necessary in order for glossolalic speakers to rapidly sequence vowels and consonants in a string of syllables.

Informational loading is another factor in the acquisition and use of phonemes. In English, consonants vary considerably in both ease of production and informational loading. However, while ease of production remains constant from English to glossolalia, given a constant phonemic context, informational loading changes. Communication of meaning by intelligible articulation is not an essential part of glossolalia. Therefore, the information carried predominantly by consonants and needed for intelligibility in English is not necessary in glossolalic speech. Thus a decrease in the frequency of consonants in glossolalic speech may be expected.

As mentioned earlier, the higher frequency of vowels in glossolalic speech may be compared to the higher frequency of vowels in infants who learn vowels first in the developmental sequence. Oates (1967) considered glossolalia to be a child-like kind of speech, following in its pattern of development, the pattern of language development in children. With regard to language learning, it is reasonable to view the high frequency of vowels as an indication that glossolalia in the speakers in this study is an infancy stage of development, if one considers glossolalia as a much newer language to the speaker than English, and if one supposes that it could be learned.

Another explanation may be offered to interpret the higher frequency of vowels and a lower frequency of consonants in glossolalic

speech as compared to English. It is well known that the emotional state of the speaker at the moment of speaking affects the manner in which sounds of speech are formed (Travis, 1971). Some writers have associated glossolalic speech with an ecstatic state which may be characterized by an emotional exaltation (Edson, 1962; Nida, 1965). If such expressions are a part of and reflected in glossolalic speech, glossolalic speakers may progress rapidly from one expression of ecstasy to another without full range of motion of the articulators. Incomplete range of motion in the articulation of consonants deletes from the acoustic signal those features which distinguish consonants, particularly voiced consonants, from vowels.

Patterns of phoneme frequency by place, manner, and voicing in glossolalic speech present more information than statistical analysis alone regarding the kinds of phonemes that make up the change in the relationship of vowels and consonants. Figure 1 presents the relationship of the percentages of consonants grouped by manner of articulation in glossolalic speech and in English.

Inspection of the data reveals that the patterns of consonants grouped by manner of articulation are essentially the same in glossolalic speech and in English, except for the lower frequency of fricatives in glossolalia. In fact, two fricative sounds were omitted by all speakers: /θ/ and /ð/.¹ As fricatives require more effort to

¹The nasal /ŋ/ was also omitted by all glossolalic speakers but the absence of this phoneme did not alter significantly the pattern of consonant frequencies by manner of articulation.

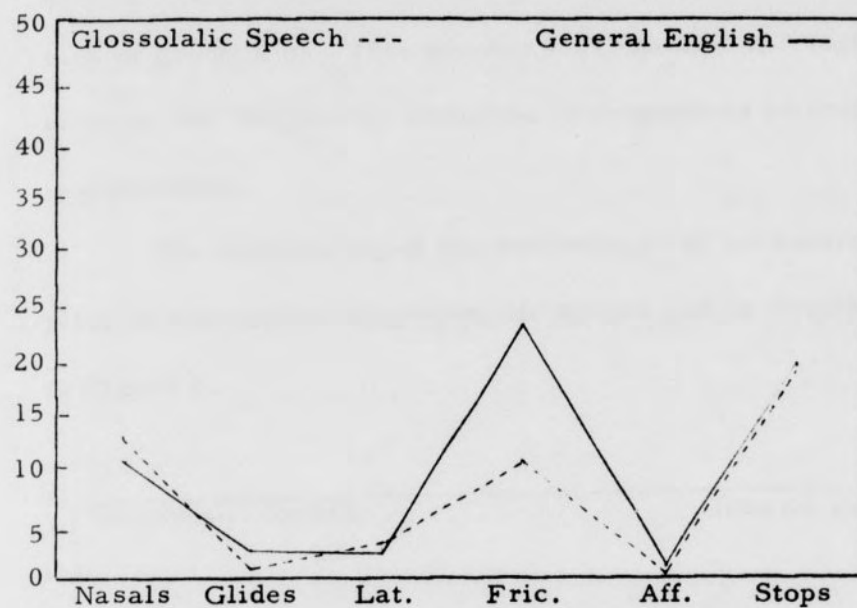


Figure 1. Relationship of Percentages of Consonants Grouped by Manner of Articulation in Glossolalic Speech and in General English.

produce, it is expected that this grouping would be utilized less frequently in glossolalic speech, which appears to be characterized by ease of production. This absence or reduction of fricative consonants accounts for the general reduction of consonants as compared to vowels in glossolalia.

The relationship of the percentages of consonants grouped by place of articulation in glossolalic speech and in English is displayed in Figure 2.

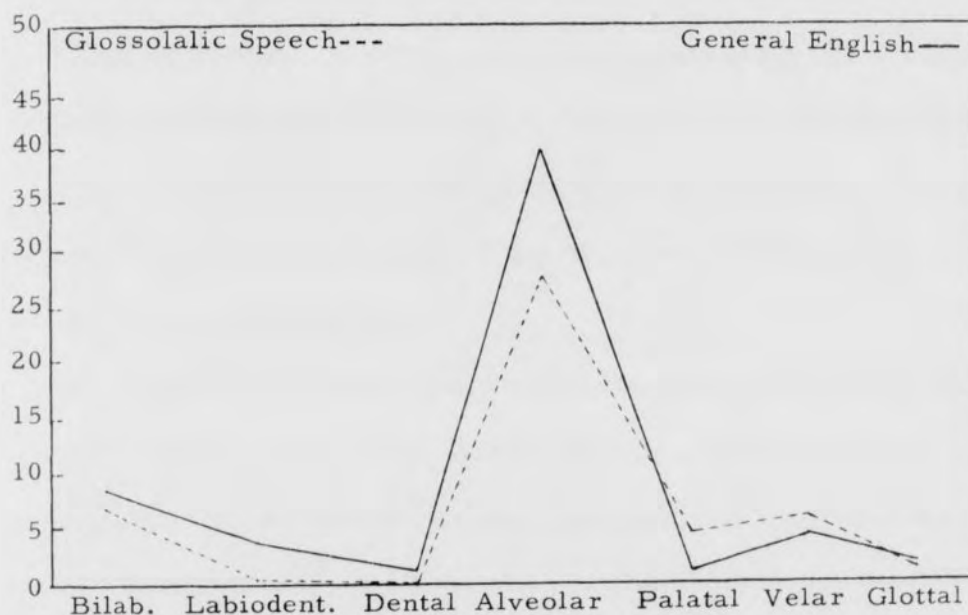


Figure 2. Relationship of Percentages of Consonants Grouped by Place of Articulation in Glossolalic Speech and in General English.

Inspection of the data indicates that the pattern of consonants grouped by place of articulation are essentially the same as in general

English except for the alveolar placement. Alveolars are less frequently used in glossolalic speech for the same reasons that consonants in glossolalia are reduced, i.e., informational loading in glossolalia is reduced. Since alveolars are the most often used place group in English, reduction in the use of consonants in glossolalia is accounted for by the reduction of alveolars in glossolalia.

Of particular interest is the reduction of the use of the alveolar /r/ in glossolalic speech. This phoneme is difficult to produce and is a later learned phoneme developmentally. When misarticulated, this phoneme is difficult to correct; frequent misarticulations in children include substitution of /w/ for /r/ or the use of the vowelized /r/. Likewise, it is conceivable that glossolalic speakers substitute a vowel for /r/, which might account for the observed reduction of the frequency of /r/ in glossolalic speech.

Regarding voicing, voiceless consonants occur with a slightly higher frequency than voiced consonants in glossolalic speech, while in English, voiced consonants occur with a higher frequency than voiceless consonants. Figure 3 presents the relationship of the percentages of consonants grouped by voiced and voiceless characteristics in glossolalic speech and in English.

In view of the glossolalists' favor for easy production as evidenced by their more frequent use of vowels, it would be expected that voiced consonants would be more frequent. That is, it is easier

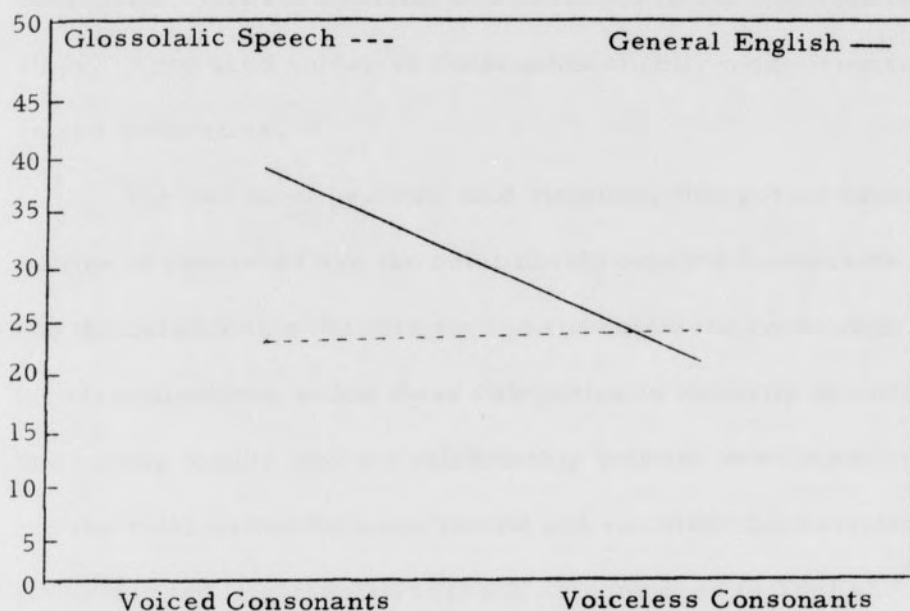


Figure 3. Relationship of Percentages of Consonants Grouped by Voiced and Voiceless Characteristics in Glossolalic Speech and in General English.

in terms of laryngeal effort to precede or follow a vowel with a voiced consonant. Just the opposite was observed in the speakers in this study. They used voiceless consonants slightly more frequently than voiced consonants.

The two most general, and simplest, categories regarding production of phonemes are the relationship between consonants and vowels and the relationship between voiced and voiceless consonants. Each of the classifications within these categories is mutually exclusive. It is interesting to note that the relationship between vowels and consonants and the relationship between voiced and voiceless consonants are both reversed in glossolalic speech as compared to English. If a glossolalic speaker attempted, consciously or unconsciously, to speak in a way different from his native language (although this study indicates he uses phonemes in his native language), the easiest way for him to change recognizable language to unrecognizable language would seem to be to reverse its simplest categories. That is, he would reverse the relationship between voiced and voiceless consonants and the relationship between the frequency of vowels and consonants. The relative ease of reversing these two mutually exclusive categories may be compared to a yes or no choice which requires less mental manipulation than a multiple choice. A multiple choice would be required in making changes regarding place and manner of articulation.

Moreover, with regard to voicing, Menyuk (1971) indicated that children present fewer errors in voicing than in manner and place or articulation and suggested that voicing is the easiest and earliest learned distinctive feature. In speech pathology, voicing errors are the easiest to correct probably because of greater kinesthetic and auditory awareness. In glossolalic speech the feature of voicing may be equally easy to reverse.

Regarding vowels and diphthongs, inspection of the data reveals that the patterns of vowels grouped by place of articulation are essentially the same except for the higher frequency of back vowels in glossolalic speech. Figure 4 presents the relationship of percentages of vowels grouped by place of articulation in glossolalic speech and English. The difference in percentages of vowels in glossolalic speech as compared to vowels in English is almost totally accounted for in the usage of back vowels.

According to Menyuk (1971), back vowels develop first in the infant and are used most frequently, which is comparable to glossolalic speech. Menyuk describes these back vowels in the infant as being "comfort" sounds. The use of the back vowels as infant expressions of comfort might be likened to the use of back vowels as glossolalic expressions of joy and ecstasy.

Although glossolalic sounds different from English, phonetic analysis reveals it is like English, in that most of the phonemes are

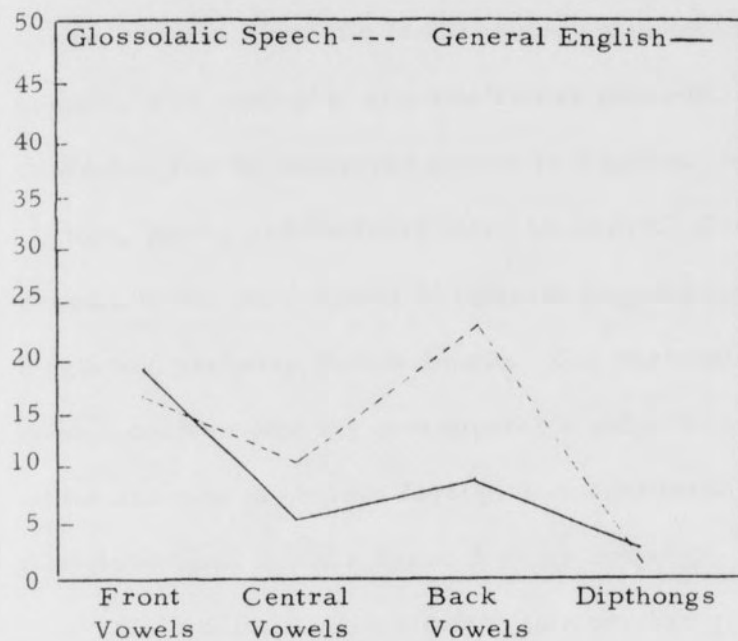


Figure 4. Relationship of Percentages of Vowels Grouped by Place of Articulation in Glossolalic Speech and in General English.

English. The patterns revealed by distinctive feature categorization closely resembles patterns in English. Without regard to phoneme usage, certain linguistic features are apparent in connected glossolalic speech. For example, glossolalia has prosodic features that are characteristic of connected speech in English. Variations in rate, rhythm, pitch, and loudness were all heard. Pauses were heard which seemed to the investigator to indicate linguistic units of at least word length and probably phrase length. The phonemic analysis of glossolalic speech coupled with the investigator's subjective observations, as well as the absence of obvious foreign elements leads to a tentative position that glossolalia is not a known foreign language.

Like all research efforts, this one has generated new questions. Regarding the nature and acquisition of glossolalia, it would be of interest to study glossolalia as a learned behavior. More specifically, studies of characteristics of glossolalic speech of persons belonging to the same family would be valuable in determining if glossolalia is learned within family groupings. The data in this study is insufficient to determine family trends in glossolalic speech. Likewise, similar studies of characteristics of glossolalic speech of persons belonging to the same prayer groups, which meet frequently and regularly, may indicate whether glossolalia is learned within these groups. Studies of characteristics of glossolalic speech of a given speaker on repeated occasions would yield additional information regarding the nature of

glossolalia. The effect of environmental reinforcements, including those in the home and in prayer groups, on glossolalic speech should be explored to determine what effects these reinforcements have on learning and using glossolalia. Finally, glossolalic speech could be studied as learned behavior using behavior modification techniques.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Glossolalia, or speaking in tongues, has been evidenced since Biblical times. Varying ideas regarding the nature of glossolalia have been presented. Some writers have interpreted glossolalic speech as known foreign languages; other writers suggested that glossolalic speech utilized the speaker's native language. In the literature, more emphasis is placed on the religious aspects of glossolalia than on the linguistic or phonetic aspects. In recent years, a few linguistic studies have been conducted; however, the results of these studies are meager and generally inconclusive.

The purpose of this study was to analyze glossolalia phonetically. It was hoped that this study would provide information regarding the nature of glossolalia.

Sixteen tape recorded samples of glossolalic speech from 16 speakers, 13 to 63 years of age, were phonetically transcribed independently and reliably by two listeners. The investigator's transcription was found to be reliable and was the one used for further analysis. In order to analyze glossolalic speech, consonant data was grouped into general production features: manner of articulation, place of

articulation, and voicing. Vowel data was grouped according to place of articulation and diphthongs. The frequency of phonemes in these categories were compared to the relative frequency of these phonemes in general English, as presented by Dewey (1923).

Analysis of the data of 16 subjects yielded the following results:

1. Glossolalic speakers used primarily English phonemes.
2. In contrast to English, vowels occurred more frequently than consonants in glossolalic speech.
3. The patterns of consonant usage in glossolalic speech were essentially the same as patterns in general English with exceptions in each categorization which indicated that certain features were found to be responsible for the general consonant reduction in glossolalia. The fricative manner was used less frequently in glossolalic speech than in English. The alveolar position was used less frequently in glossolalic speech. Other patterns of manner and place of articulation remained essentially the same as in English. Voiceless phonemes occurred with a higher frequency than voiced phonemes in glossolalic speech in contrast with their relationship in English.
4. The increased frequency of back vowels in glossolalic speech distinguished the vowel pattern in glossolalic speech from English.

Possible reasons for the phonetic differences found between glossolalic speech and English were discussed and suggestions for further research was made.

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TABLE 6
 FREQUENCY OF CONSONANT PHONEMES IN SIXTEEN
 SAMPLES OF GLOSSOLALIC SPEECH

Subjects	m	w	p	b	f	v	θ	ð
1	37		2					
2	9		19					
3	18		8			1		
4	2		63	2	4			
5	15		1	7				
6	8							
7	50							
8	56	10	9	5	7			
9	10							
10	13		3	4				
11	6							
12	10							
13	26		1					
14	3							
15	41		3					
16	123		15	1	1			

TABLE 6--Continued

Subjects	n	l	s	z	r	ʃ	dʒ	t
1	39	26	20					20
2	39	16						41
3	15	25	18					32
4	39	129	49		3			153
5	32	25	24		3			29
6	17	4			15			36
7	40	4			8			50
8	113	18	78	1	46	46	1	130
9	9	4	5		3			3
10	6	1	1		5			22
11	17	11	9		1			2
12	36		9		5			9
13	22	6	31		15	2		14
14	31	13	4		20	2		34
15	49	21	8		5	1		3
16	70	128	102		1			71

TABLE 6--Continued

Subjects	d	j	f	z	η	k	g	h
1	4	2	1			60		7
2		6	12			45		15
3	1	9	9			31		2
4	6					32	1	
5	23	14	11			28		10
6	21	6	22			19		10
7	57		4			41		
8	28	12	2			67		11
9		3	4	1		9		8
10	2	6	14			9		1
11	5	1	6	1		5		
12	5	2	10			6		
13	4	7	2			19		2
14		8	19	1		43	1	6
15	5	18	41			30		1
16	4	1	26			207		5

TABLE 7

FREQUENCY OF VOWEL PHONEMES IN SIXTEEN
SAMPLES OF GLOSSOLALIC SPEECH

Subjects	i	I	e	ɛ	æ	ʌ	ə	u
1	75	10	2		5	36	20	
2	20	6	19	4		29	17	2
3	32	0	2		2	45	15	
4	117	36	1	7	1	87	49	4
5	59	11	3			43	45	
6	33	4	24	1	2	17	8	2
7	44	6				50	17	
8	110	47	38	22	28	58	14	12
9	7	7	6	1	1	18		1
10	17	1	8	4		9		
11	12		16		2	9		2
12	32			1		24	7	2
13	27	13	12	17		23	7	
14	46	1	10	10		26	4	7
15	44	4	26	3	14	29	7	3
16	148	36	20	21	34	118	4	8

TABLE 7--Continued

Subjects	v	o	s	a	u	x	av
1		46	1	88	7		
2	1	31		79			
3		32	1	48	8		
4		32	2	82	7	48	
5		27	3	50	1		
6		32		50	8		
7		25		108			
8	1	132		143	9		
9		11		8			1
10		18		37	4		
11		13		22			
12	1	5		26			
13	2	23	2	34			
14		32	1	62		1	
15	1	47		69	1	3	
16		244		269	21		

TABLE 8

PERCENTAGES OF CONSONANT PHONEMES IN SIXTEEN
SAMPLES OF GLOSSOLALIC SPEECH

Subjects	m	w	p	b	f	v	θ	ʃ
1	7.28		.39					
2	2.20		4.63					
3	5.00		2.22			.28		
4	.21		6.59	.21	.42			
5	3.23		.21	1.51				
6	2.36							
7	9.92							
8	4.46	.80	.72	.40	.56			
9	8.33							
10	7.03		1.62	2.16				
11	4.29							
12	5.26							
13	8.36		.32					
14	.78							
15	8.60							
16	7.33		.89	.06	.06			

TABLE 8--Continued

Subjects	n	l	s	z	r	tj	dj	t
1	7.68	5.12	3.94					3.94
2	9.51	3.90						10.00
3	4.17	6.94	5.00		1.67			8.89
4	4.08	13.49	5.13		.31			16.00
5	6.90	5.39	5.17		.65			6.25
6	5.02	1.18			4.43			10.62
7	7.94	.79			1.59			9.92
8	9.01	1.43	6.22	.08	3.67	3.67	.08	10.37
9	7.50	3.33	4.17		2.50			2.50
10	3.24	.54	.54		2.70			11.90
11	12.14	7.86	6.43		.71			1.43
12	18.95		4.74		2.63			4.74
13	7.08	1.93	9.97		4.82	.64		4.50
14	8.05	3.38	1.04		5.19	.52		8.83
15	10.27	4.40	1.67		1.05	.21		.63
16	4.17	7.63	6.08		.06			4.22

TABLE 8--Continued

Subject	d	j	f	3	7	k	g	h
1	.79	.39	.20			11.81		1.37
2		1.46	2.93			10.98		3.66
3	.28	2.50	2.50			8.61		.56
4	.63					3.35	.10	
5	4.96	3.02	2.37			6.03		2.15
6	6.19	1.77	6.49			5.60		2.95
7	11.31		.79			8.14		
8	2.23	.96	.16			5.34		.88
9		2.50	3.33	.83		7.50		6.67
10	1.80	3.24	7.57			4.87		.54
11	3.57	.71	4.29	.71		3.57		
12	2.63	1.05	5.26			3.16		
13	1.29	2.25	.64			6.11		.64
14		2.08	4.93	.26		11.17	.26	1.56
15	1.05	3.77	8.60			6.29		.21
16	.24	.06	1.55			12.34		.30

TABLE 9
 PERCENTAGES OF VOWEL PHONEMES IN SIXTEEN
 SAMPLES OF GLOSSOLALIC SPEECH

Subjects	i	I	e	ɛ	æ	ʌ	ə	u
1	14.76	1.97	.39		.98	7.09	3.94	
2	4.84	1.46	4.63	.98		7.07	4.15	.49
3	8.88		.56		.56	12.50	4.17	
4	12.24	3.77	.10	.73	.11	9.10	5.13	.42
5	12.72	2.37	.65			9.27	9.70	
6	9.73	1.18	7.08	.29	.59	5.01	2.36	.59
7	8.73	1.19				9.92	3.37	
8	8.77	3.75	3.03	1.75	2.23	4.63	1.12	.96
9	5.83	5.83	5.00	.83	.83	15.00		.83
10	9.19	.54	4.32	2.16		4.86		
11	8.57		11.43		1.43	6.43		1.43
12	16.84			.53		12.63	3.68	1.05
13	8.68	4.18	3.86	5.47		7.40	2.25	
14	11.95	.26	2.60	2.60		6.75	1.04	1.82
15	9.22	.84	5.45	.63	2.94	6.08	1.47	.63
16	8.82	2.15	1.19	1.25	2.03	7.03	.24	.48

TABLE 9--Continued

Subjects	\bar{u}	\bar{o}	\bar{v}	\bar{a}	\bar{ai}	\bar{vi}	\bar{av}
1		9.06	.20	17.32	1.38		
2	.24	7.56		19.27			
3		8.89	.28	13.33	2.22		
4		3.35	.21	8.58	.73	5.02	
5		5.82	.65	10.78	.22		
6		9.44		14.75	2.36		
7		4.96		21.43			
8	.08	10.53		11.40	.72		
9		9.17		6.67			.83
10		9.73		20.00	2.16		
11		9.29		15.71			
12	.53	2.63		13.68			
13	.64	7.40	.64	10.93			
14		8.31	.26	16.10		.26	
15	.21	9.85		14.47	.21	.63	
16		14.54		16.03	1.25		